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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,093	02/01/2005	John Thomas Sir Irvine	CAF-3330203	8573
25006 7590 07/29/2008 GIFTORD, KRASS, SPRINKLE, ANDERSON & CITKOWSKI, P.C. PO BOX 7021 TROY, MI 48007-7021				
EXAMINER				
LAIOS, MARIA J				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
07/29/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/523,093

Applicant(s)

IRVINE ET AL.

Examiner

MARIA J. LAIOS

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed 9 April 2008. Claims 1-14, 20 and 22 have been amended and previously withdrawn claims 15-19 have been cancelled. Currently, claims 1-14 and 20-22 are pending.

Claim Interpretation

In claims 1-12, 14, 22, it is noted a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In claims 1 and 14, the intended use of a solid oxide fuel cell is not given patentable weight.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (US 5,686,198) in view of Seto et al (EP 0 411 547 A1).

With respect to claims 1-4 and 7 Kuo discloses a double perovskite oxide material with the general formula of $(La_{1-w-x-y}Ln_wCe_x(M_A)_y)(Mn_{1-z}(M_B)_zO_3$, where Ln is a Lanthanide

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mixture, M_A is an A-site dopant of Sr, Ca, or Ba, M_B is a B-site dopant of **at least one of** Mg, Fe, or Cr (col. 5 lines 59-60-applies to claim 4), w is from about 0.05-0.9, x is from about 0 to 0.1, y is about 0.1-0.2 and z is about 0.05-0.1 (col. 6 lines 30-50). This fulfills the claimed general equation of $(Ln_aX_b)_e(Z^1_cZ^2_d)_gO_g$ when Ln is a Lanthanide mixture, M_A is an A-site dopant of Sr, Ca, or Ba, M_B is a site dopant of Mg, Fe, or Cr; g is equal to 3; e and f are equal to 1; the stoichiometries of the A-site are equal to 1 (1-w-x-y), and the stoichiometry of the B-site values is equal to 1 (1-z, applicant states that c + d has a value of 1) but fails to teach the B-site values for c and d between 0.25 and 0.75.

Seto teaches a double perovskite material with the B site values (Cr is up to 0.5, which would fulfill the B-site requirements of c, d when the molar fraction of Cr is between 0.25-0.5) in order to improve the electrical conductivity of the complex oxide (Page 4 lines 9-10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the B site molar fraction values of Kuo with those of Seto because this would improve the electrical conductivity of the complex oxide.

With respect to claims 4-6 and 8, Kuo discloses the M_B is **at least one of** Mg, Fe, Cr or Ni (col. 5 lines 59-60-applies to claim 4) the B-site dopant can be a combination of these elements which would allow for a third element to occupy the B site. The mere fact that the reference suggests a multitude of possible combinations does not in and of itself make any one of those combinations less obvious that specific embodiment is not taught as preferred makes it no less obvious *Merck v. Biocraft*, 10 USPQ2d 1843 (Fed.

Cir. 1989). The limitations pertaining to the dopant being present at a level of not more than 20 percent and a third element occupying the B-site of at least 30 percent would be addressed because the molar ratio of claim 1 are met.

With respect to claim 9-10, Kuo discloses the $(La_{1-w-x-y}Ln_wCe_x(M_A)_y)$, where w is from about 0.05-0.9, x is from about 0 to 0.1, y is about 0.1-0.2 and z is about 0.05-0.1 (col. 6 lines 30-50). Therefore the claimed molar ratio ranges of the instant application (a is from 0.7-0.9 and 0.72-0.85) are encompassed by Kuo and in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

With respect to claims 11-12, Kuo teaches the porosity of the electrode as 20-40 percent (col. 6 line 22, which includes the endpoint of claim 12) and in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

With respect to claim 22, Kuo modified by Seto teach the material as discussed above. Kuo discloses the y from 0.1 to 0.2 (y corresponds to b of the instant application) but fails to disclose the y range from 0.25 to 0.75. Seto teaches a double perovskite material with the amount of alkaline earth metal replacing La is up to 0.5 and preferably 0.2-0.4 molar fraction and teaches that with in this range the electrical conductivity is improved (Page 3 lines 50-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have the molar fraction of the alkaline earth metal replacing La between 0.2 and 0.4 because this improve the electrical conductivity of the material.

4. Claims 13, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (US 5,686,198) in view of Seto et al (EP 0 411 547 A1) as applied to claim 1 above, and further in view of Irvine et al (WO 2003/036746).

Kuo modified by Seto et al. disclose the material as is disused above and incorporated herein but fails to disclose the material as an anode. Irvine et al. discloses that lanthanum perovskite materials can be used in both the anode and the cathode of a solid oxide fuel cell (Page 9 lines 23-32). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use lanthanum perovskite material as both the anode and the cathode of the fuel cell in order to save money by using the material in both electrodes.

With respect to claims 20 and 21, Kuo discloses the method of oxidizing a fuel in an SOFC comprising the steps of providing an anode and oxidizing a hydrocarbon gas in the SOFC (col. 2 lines 1-15). The material as discussed above in claim 1 is used for a cathode electrode in a SOFC. Irvine et al. discloses that lanthanum perovskite materials can be used in both the anode and the cathode of a solid oxide fuel cell (Page 9 lines 23-32). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use lanthanum perovskite material as both the anode and

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the cathode of the fuel cell in order to save money by using the material in both electrodes.

Response to Arguments

5. The rejection under 35 USC 112 first paragraphs of 12 December 2007 has been withdrawn.

Applicant argues that the material is taught for a cathode and not for an anode. However one of ordinary skill in the fuel cell art would understand that a lanthanum perovskite material can also be used for an anode as is taught by Irvine et al (WO 03/036746).

6. Applicant's arguments filed 9 April 2008 have been fully considered but they are not persuasive. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA J. LAIOS whose telephone number is (571)272-9808. The examiner can normally be reached on Monday - Thursday 10 am -7 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJL
/Susy Tsang-Foster/
Supervisory Patent Examiner, Art Unit 1795